

Excitatory spinal interneurons from human pluripotent stem cells to treat spinal cord injury

Grant Award Details

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Grant Type: Quest - Discovery Stage Research Projects

Grant Number: DISC2-14180

Investigator:

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Institution:	Gladstone Institutes, J. David
Type:	PI

Award Value: \$2,942,198

Status: Pre-Active

Grant Application Details

Application Title: Excitatory spinal interneurons from human pluripotent stem cells to treat spinal cord injury

Public Abstract: **Research Objective**

The primary objective of this research is to test whether excitatory human V2a spinal interneurons engineered from PSCs can repair the damaged spinal cord and restore motor function.

Impact

Currently no existing therapies are capable of repairing the injured spinal cord. Our therapeutic cell candidate - human 'V2a' spinal interneurons - could address this significant unmet medical need.

Major Proposed Activities

- Determine GMP-compliant PSC line(s) that yield optimal V2a donor populations.
- Define the optimal dose of transplanted GMP-V2a neurons that can be safely administered to the injured spinal cord.
- Determine the timeline for donor cells to anatomically integrate with damaged spinal cord and repair motor networks
- Determine the timeline for transplanted V2a neurons to functionally connect to injured motor networks and contribute to recovery.
- Determine the therapeutic efficacy of transplanted V2a neurons derived from GMP-compliant PSCs to functionally repair motor circuits following spinal cord injury.

Statement of Benefit to California: Spinal cord injury (SCI) is a permanently debilitating condition that renders individuals partially or fully paralyzed. The associated life-time health care costs are exorbitant (millions of dollars) and the ongoing need for assisted care impacts family members and friends. A reparative cell therapy for SCI that could restore motor function would benefit the autonomy of the individual and enable an effective return to society and improved quality of life.

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